

REMARKS

Claims 1-23 were examined and reported in the Office Action. Claims 1-23 are rejected. Claims 1-23 are cancelled. New claims 24-36 are added. Claims 24-36 remain. Applicant notes that the term "drum" is an incorrect translation of the French word "fut." Barrel is the proper language. Applicant also notes that "sleeve" is an incorrect translation of the French word "chemise." The correct wording is "liner"). Therefore, Applicant has amended the specification and claims to correct the error in translation. No new matter is added.

Applicant requests reconsideration of the application in view of the following remarks.

I. 35 U.S.C. § 112

A. It is asserted in the Office Action that the specification is objected to under 35 U.S.C. § 112, first paragraph for typographical errors and indefiniteness. Applicant has amended the specification to overcome the 35 U.S.C. § 112, first paragraph objections.

Accordingly, withdrawal of the 35 U.S.C. § 112, first paragraph objections for the specification are respectfully requested.

B. It is asserted in the Office Action that claims 1-23 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant has cancelled claims 1-23, therefore the 35 U.S.C. § 112, second paragraph rejections are moot. Applicant notes that new claims 24-36 are definite.

Accordingly, withdrawal of the 35 U.S.C. § 112, second paragraph rejections for claims 1-23 are respectfully requested.

C. It is asserted in the Office Action that claims 7-11 and 18-23 are rejected under 35 U.S.C. § 112, fourth paragraph, as being of improper dependent forms for failing to further limit the subject matter of a previous claim, and for involving an improper multiple dependent claim format. Applicant has cancelled claims 7-11 and 18-23, therefore the 35 U.S.C. § 112, fourth paragraph rejections are moot. Applicant notes that new claims 24-36 are in proper form.

Accordingly, withdrawal of the 35 U.S.C. § 112, fourth paragraph rejections for claims 7-11 and 18-23 are respectfully requested.

II. 35 U.S.C. § 103(a)

It is asserted in the Office Action that claims 1-23 are rejected in the Office Action under 35 U.S.C. § 103(a), as being unpatentable over U. S. Patent No. 6,527,039 issued to Shade ("Shade"). Applicant has cancelled claims 1-23 and added new claims 24-36. Applicant shall address Shade regarding new claims 24-36.

According to MPEP §2142

[t]o establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. (In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)).

Further, according to MPEP §2143.03, "[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. (In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974))." "*All words in a claim must be considered in judging the patentability of that claim against the prior art.*" (In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970), emphasis added.)

Applicant's claim 24 contains the limitations of

forming a core assembly having a plurality of barrels, each barrel having a liner therearound and intended to form respective cylinders in the part, crankshaft bearing zones and at least one cooling unit in a region opposite the barrels, positioning the core assembly in a mold cavity defined by a metallic mold shell, the cooling unit is located at a bottom portion of said core assembly, further positioning in an upper region of the mold cavity at least one risering core, and filling the mold cavity by gravity through said at least one risering core.

Applicant's claim 29 contains the limitations of

forming a core assembly having a plurality of barrels, each barrel having a liner therearound and intended to form respective cylinders in the part and crankshaft bearing zones, said core assembly being formed by rigidly connecting together a set of core segments each including at least one barrel surrounded by a liner and a crankshaft bearing zone, said core assembly further including at least one cooling unit, positioning the core assembly in a mold cavity defined by a mold shell, and filling the mold cavity.

Applicant's claim 34 contains the limitations of

forming each of a plurality of sand core segments by placing at least one liner in a predetermined position in a core box and then building the core, each segment including at least one barrel surrounded by the liner and a crankshaft bearing zone, forming a core assembly by rigidly connecting together a set of said core segments, said core assembly further including at least one cooling unit, positioning the core assembly in a mold cavity defined by a mold shell, and filling the mold cavity.

Shade describes a method for assembling resin bonded sand cores of an engine block mold package including an integral barrel/crankcase bearing core having a number of barrels integrally formed on a crankcase region. Metal cylinder bore liners are placed manually or robotically on each barrel of the core (see Shade, column 6, lines 39-41), after the core has been made, and the complete engine block mold with the core package inside is then moved to a molding filling station, where it is filled with molten metal typically using a low pressure filling process.

Distinguishable, Applicant's claimed invention differs from Shade in several aspects, including the mold material and filling process, the core package structure and the manufacture of core segments provided with cylinder liners. Shade uses a resin bonded sand mold with filling by low pressure, i.e. from the bottom part of the mold and therefore in the vicinity of the cooling unit. And, even though Shade does mention that gravity filling would be possible (see Shade, column 11, lines 31-32), there is no suggestion that such filling would occur from the top of the mold, i.e. remotely from the cooler. In this regard, the specification of Shade does not

teach, disclose or suggest any kind of risering system in the mold (the latter being apparently closed at the top), so that even if the ordinary person skilled in the field would contemplate filling by gravity, then this person would still do this from the bottom of the mould through appropriate ducting.

In order to improve the mechanical quality of the casting, Applicant's claimed invention provides the combination of a metal mold shell, cooling unit(s) in the bottom portion of the mold, and filling by gravity from the top (i.e., remotely from the cooling unit, through a risering system placed as a core inside the mold cavity. Applicant's combination is cost effective and simple to implement while allowing to obtain a satisfactory metallurgical quality of the casting, in particular at the crankshaft bearing zones.

Further, a specific feature of Shade is the use of an integral (one piece) barrel/crankcase. Such integral construction has drawbacks. A sand core is always subject to some degree of plastic or permanent deformation (actually a flowing phenomenon) between core formation and casting the part. And the larger the core, the greater the dimensional changes in the core. Such dimensional variations are quite undesirable in the application to cylinder block casting, where the accuracy of the position of the cylinders relative to the crankshaft is fundamental.

To the contrary, Applicant's claimed invention provides (claim 29) that the core assembly is made from a set of core segments each having a barrel, which will form a cylinder and a crankshaft bearing zone. This allows the positional changes of the barrels relative to the crankshaft bearing zones to substantially decrease even when there is some flowing of the agglomerated sand. As recited in claims 30-32, a reference position of the segments is ensured before rigidly connecting the segments.

A further advantage is that the core segments can be stored horizontally, which minimizes deformation during storage. Moreover, it should be noted that Shade teaches away from this feature: Shade asserts (see Shade, column 2, lines 47-51) that the use of multiple mold components to support the liners leads to increased positional variation thereof due to the stacking up of dimensional variations and assembly clearances.

Additionally, Shade provides that the core package involves placing the metal liners on the barrels of the sand core after the latter has been formed. As the agglomerated sand can be extremely fragile when scraped off the barrel when placing the liner thereon, it can result that the final position of the liner has a position that varies from its ideal position. Again, a good mutual positioning of the cylinder and crankshaft in the finished engine may not be reached. Also, Applicant's claim 34 asserts that the cores are built by first placing the liner(s) (as well as possibly a cooling unit) in the core box, and then firing the sand therein. This again allows improvement to the dimensional characteristics.

Since Shade does not teach, disclose or suggest all the limitations of Applicant's claims 24, 29 and 34, as listed above, Applicant's claims 24, 29 and 34 are not obvious over Shade in view of no other prior art since a *prima facie* case of obviousness has not been met under MPEP §2142. Additionally, the claims that directly or indirectly depend from claims 24, 29 and 34, namely claims 25-28, 30-33, and 35-36, respectively, would also not be obvious over Shade in view of no other prior art for the same reason.

CONCLUSION

In view of the foregoing, it is submitted that claims 24-36 patentably define the subject invention over the cited references of record, and are in condition for allowance and such action is earnestly solicited at the earliest possible date. If the Examiner believes a telephone conference would be useful in moving the case forward, he is encouraged to contact the undersigned at (310) 207-3800.

If necessary, the Commissioner is hereby authorized in this, concurrent and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2666 for any additional fees required under 37 C.F.R. §§1.16 or 1.17, particularly, extension of time fees.

PETITION FOR EXTENSION OF TIME

Per 37 C.F.R. 1.136(a) and in connection with the Office Action mailed on August 7, 2006, Applicant respectfully petitions the Commissioner for a three (3) month extension of time, extending the period for response to February 7, 2007. The Commissioner is hereby authorized to charge payment to Deposit Account No. 02-2666 in the amount of \$1,020.00 to cover the petition filing fee for a 37 C.F.R. 1.17(a)(3) large entity. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

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Dated: February 6, 2007

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CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being submitted electronically via EFS Web on the date shown below to the United States Patent and Trademark Office.


Jean Svoboda

Date: February 6, 2007